The DRILLER

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THE JOHN CRERAR
JAN 14 1945
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In a New Hampshire "Winter Wonderland" setting, a dairy farm well is drilled by O. E. Dube of Manchester.

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OLUME 19 JANUARY, 1945 NUMBER 1

To contractors with modern, proved drilling equipment will go the lion's share of tomorrow's contracts for air conditioning, industrial, municipal, suburban, farm, etc., wells. When all the restrictions of wartime are removed, customers will prefer the driller whose equipment is equal to its jobs.

Plan your future with Bucyrus-Eries. Investigate the features that have made them favorites — fast drilling, exceptional mobility, quick set ups, all around dependability on even the toughest jobs. These features will make Bucyrus-Eries your best choice for profits on tomorrow's wells.

J-92

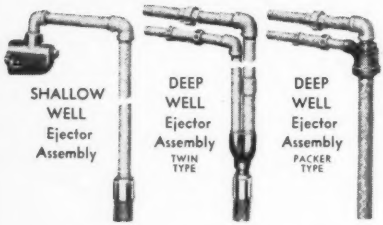
BUCYRUS-ERIE CO. SOUTH MILWAUKEE, WIS.
EVANSVILLE, IND.
ENGLEWOOD, N. J.

ARMY E

Here's *Simplified* PACKAGING

THAT MAKES STOCK KEEPING *Much Easier!*

A MESSAGE TO MYERS DEALERS



Each package is complete (less pipe) for making up these Ejector Assemblies. Package containing pump and motor assembly is the same for both shallow and deep well systems. The only tools needed for assembling this new "H" Series *Ejecto* are a pipe wrench and S wrench. Easy to install, easy to service.

NOTE: Under wartime restrictions and present maximum production capacity, it is Myers policy to confine current output to Myers dealers and distributors only.

Convertible Feature OF MYERS NEW "H" SERIES *Ejecto* OFFERS MANY ADVANTAGES

Myers patented, new convertible feature is one of the big achievements of all time in water system designing and construction. By permitting use of the same pump and tank for both shallow and deep well service, this new feature simplifies water system retailing in many ways. For example, it makes possible convenient packaging—saves space, saves time and work in stock maintenance.

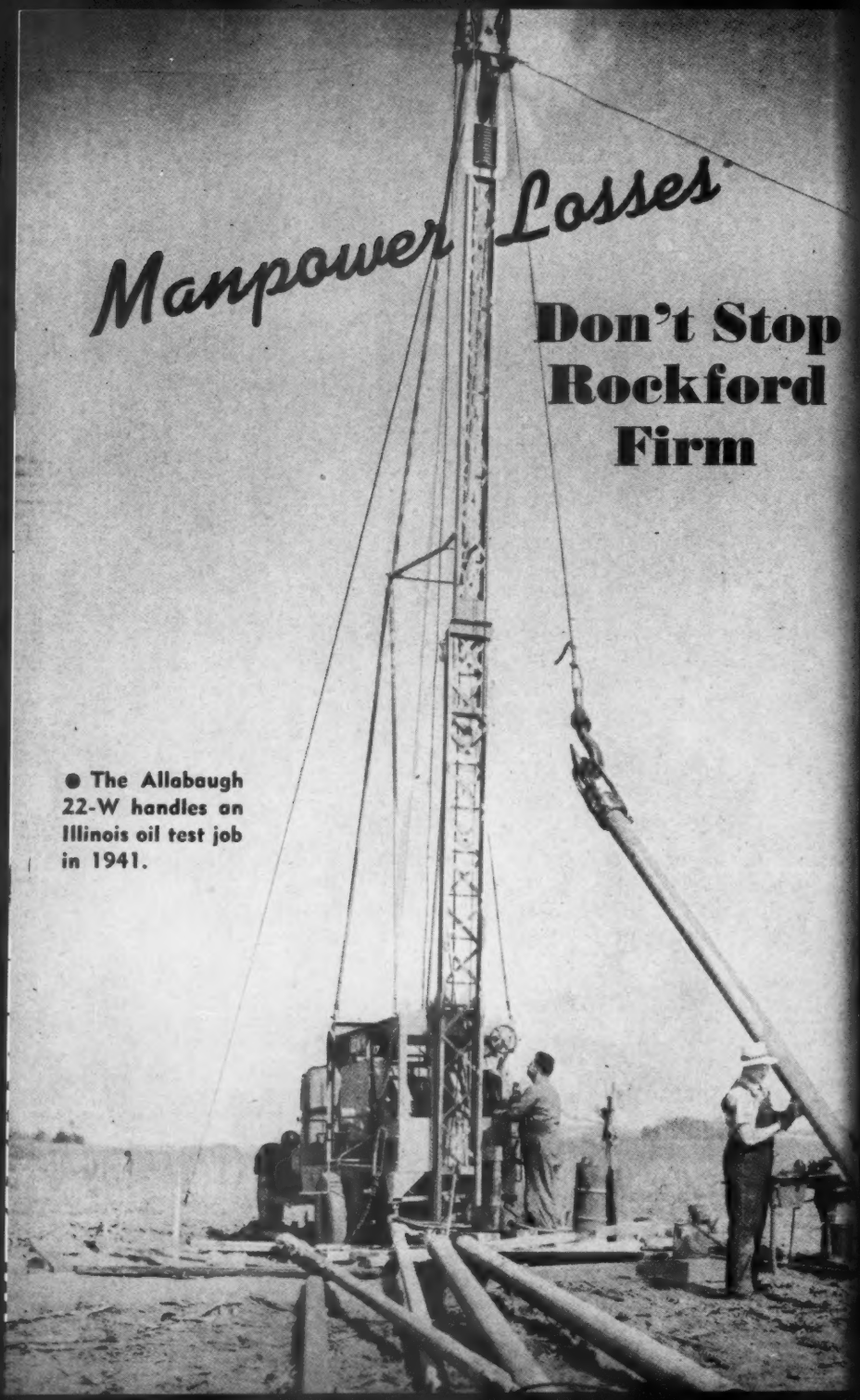
Pump and motor assembly — and all Ejector assemblies — are packaged separately and plainly marked with catalog numbers for easy selection from dealer's stock. Pump and motor package and tank, plus the proper Ejector package for either shallow or deep wells, makes a complete water system. Fewer pump and motor units are needed to meet all conditions — which means lower inventory. New in design, new in construction, Myers "H" Series *Ejecto* offers many extraordinary features beyond the reach of competition.

TAKE OFF YOUR HAT TO MYERS PUMPS and WATER SYSTEMS

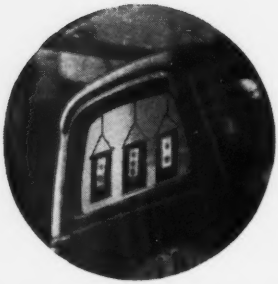
THE F. E. MYERS & BRO. COMPANY
Dept. 8-49 Ashland, Ohio

Manpower Losses

Don't Stop Rockford Firm



● The Allabaugh 22-W handles an Illinois oil test job in 1941.



On a well job in Rockford's "loop" one of this company's trucks displayed seven stars—one for each of the owner's four sons and three daughters in military service. Now there are eight Allabaughs in service, for only recently the fifth son was inducted. Despite this handicap, however, the Allabaugh Well Company continues to grow.

WORLD WAR II has probably presented as big a problem to the Allabaugh Well Company of Rockford, Illinois, as it has to any other drilling contractors in the country. When R. G. Allabaugh started the company in 1940 he could look to all of his five sons for help — and a big help they were. But the Pearl Harbor raid in 1941, with its resulting declaration of war on Japan, Germany, Italy et al, led to something unanticipated: military service.

All of the Allabaugh boys were of military age — or soon grew into it — with the result that one after the other enlisted until four of the boys and three girls were in various branches of the service. That left only the senior Allabaugh and his remaining son, John, to carry on the well business which was thriving around Rockford in a territory extending as far South as La Salle, west to Freeport, and north to Rock City. But recently he, too, answered the call and is now in the Army.

• Among the special problems confronting the Allabaugh Company on this downtown well were setting up, disposal of bailings, and obtaining of water for drilling. All were met successfully.

John was the son who was largely responsible for the formation of the Allabaugh Well Company. Before its establishment in '40 John had put in enough service as helper for another drilling contractor to gain a fine first-hand knowledge of drilling essentials, formations, and the vagaries of ground water. It was at his suggestion that his father, then located at Sterling, some 50 miles

(Continued on page 14)

Geophysical Logging

of Water Wells in Northeastern Illinois

By

CARL A. BAYS, Geologist and Engineer

and

STEWART H. FOLK, Associate Geologist,

Illinois State Geological Survey, Urbana, Illinois

Editor's Note: The material in this series is from a paper presented before the Western Society of Engineers and published in its Journal for September, 1... These articles appear in THE DRILLER by special permission of the Western Society of Engineers and of the Illinois Geological Survey.

A CONTINUOUS record of hole diameter is furnished by the hole caliper, which consists of four arms extended by springs, and an electric resistor motivated by the arms. The instrument is run into the hole with arms closed, held to the frame by a small steel band. The arms are opened on bottom by breaking the band through detonation of a small shot.

Then the average hole diameter is logged as a continuous graph by recording the changes in resistance in the circuit due to the arms moving the resistor as the tool is drawn up the hole.

Caliper surveys of water wells in Illinois have been of value in analyzing the effect of shooting, in finding the diameter of wells about which there was no available information, and in locating caving zones. They have also furnished important information on the condition of casing and liners and the condition of the casing seat, and they have proved the existence of crevice systems in some of the dolomite formations which play an important part in the groundwater supplies of northern Illinois.

Caliper records are also affected by stray currents in some urban areas, and some of the records are of greater relief than is explained by the variations in hole diameter, especially in lower shaly formations where such interference is at a maximum. Where stray earth currents exist, satisfactory caliper logs have been obtained only by cutting out the regular tool-opening and recording circuits and by using instead a rod affixed to the lower part of the tool which breaks the band and releases the arms when the tool is set on bottom, and as improvised alternating-current circuit to take a series of readings throughout the well; no continuous record is ob-

Familiar practice in the oil fields, geophysical logging has only recently been applied to water wells. Here is a further discussion of the methods used by the Illinois Geological Survey, pioneers in geophysical logging.

tained but a log can be constructed from the spot readings.

Fluid-Resistivity Logs

Logs of the variations in resistivity of the fluid have furnished much evidence regarding circulation conditions within wells. Logs have been run with different instruments with closely spaced electrodes inside an insulated tube all measuring resistivity of the fluid in the well-bore.

In most of the surveys made, two fluid-resistivity logs have been run, one under natural conditions and the other after salt was added to the well. Originally it was planned to run a fluid-resistivity survey to check the distribution of salt in the well, and it was decided that in order to do so it was essential to know what variations, if any, existed before salting. It was found after a few experimental runs that there were major variations in fluid resistivity in wells and that some significance could be attached to them. It was also found that in static wells there was a tendency to spill salt on top of the fluid column while loading the salter so that the top few feet of water were very salty but that otherwise the salt was distributed fairly evenly. However, in most wells surveyed, the surveys run after salting showed even greater variations in fluid resistivity than natural fluid-resistivity curves.

The current meter, modified from

(Continued on page 18)

• For recording variations in diameters of wells, a caliper was run down. Top picture shows caliper with arms fastened and ready to run into the well. Bottom picture shows caliper, arms extended, being removed from a well after logging.

The DRILLER

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Your Reactions Are Our Guide

"I ENJOY THE DRILLER very much and would appreciate your sending it again," writes one of our New Jersey readers, bringing to mind the fact that only if you tell us can we know how well this magazine is filling the bill.

War has hit all publications hard and we are no exception. The manpower shortage has been acute; the paper shortage has meant holding issues down in size and keeping circulation more or less static. Rationing — particularly of gasoline and tires — has made it more difficult for our staff to get around to obtain material for articles; big-paying war jobs or the armed services have claimed many of the skilled free-lance writers upon whom we could formerly depend. Yet, it spite of these difficulties we have felt that your needs justified our continuing to publish THE DRILLER without interruption.

Just as always, THE DRILLER is *your* magazine. Its purpose is to help *you*. Through articles on the drilling experiences of other contractors we hope to bring you hints that you can use. The articles on new developments, like the current series on geophysical logging, are selected on the basis of their value to you. The departments — The Driller and the Law, News of the Month, From the Mailbag, the editorials, Bargain Counter, and Wit Bits — are designed to render services, ranging from helping you avoid pitfalls to giving you a good-natured laugh. The only way we can know that you find this publication valuable is by your letting us know.

Does THE DRILLER help you?

If so, won't you please drop us a line telling your reactions to your wartime DRILLER, perhaps giving special mention to the features you find particularly useful? Any suggestions you may have in regard to topics you'd like to have covered will be welcomed. You can help us keep THE DRILLER *your* magazine!

Rope Splicing Is An Art

THE splicing of wire rope is an art that must be practiced. Many papers have been written on "how to splice," but continued practice of the actual manual operations is necessary before you can consider yourself a rope splicer.

There is an old saying—"if it looks right, it is right," and this saying

(Continued on page 20)

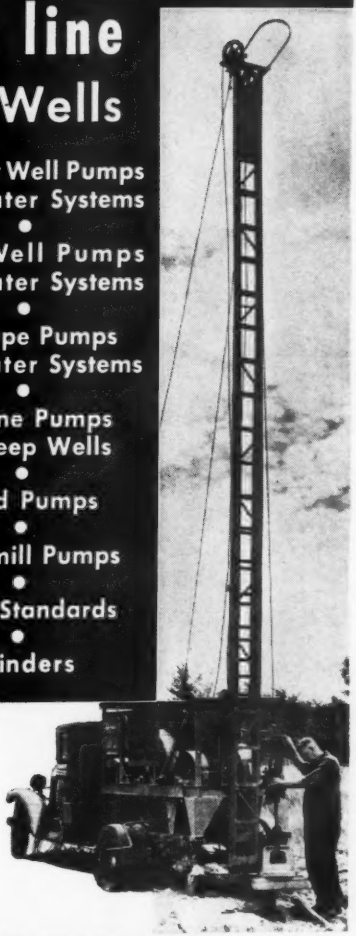
Specify DEMING
the COMPLETE line for All Types of Wells

Wise Well Drillers are "lining up" with the COMPLETE Deming line to meet EVERY demand for EVERY type of pump and water system from ONE dependable source of supply.

This CONCENTRATION in the DEMING line SIMPLIFIES your business, SAVES a lot of time, and helps you to handle MORE work at BETTER profit.

Deming Well Driller-Dealers are PREPARED for the biggest boom in well drilling history! IT'S STARTING NOW!

- Shallow Well Pumps and Water Systems
- Deep Well Pumps and Water Systems
- Jet Type Pumps and Water Systems
- Turbine Pumps for Deep Wells
- Hand Pumps
- Windmill Pumps
- Pump Standards
- Cylinders



DEMING
THE COMPLETE LINE
PUMPS AND WATER SYSTEMS
The Deming Company • Salem, Ohio

NEWS OF THE MONTH

Review Of 1944 Water-Year Given

DAMAGING floods and excessive runoff in the agricultural central West, and droughts in the important hydro-power producing areas of the industrial Northeast and Northwest were the dominant abnormalties of the water year which ended September 30. Water conditions with respect to war needs were not so favorable as last year, the Geological Survey reports.

Although stream flow in the West was widely and frequently subnormal, the year was the third wettest of record in the north central region from Kansas to Manitoba, and the annual flow of representative streams in Iowa and Nebraska was greatest of record.

Natural ground-water levels, as observed in key wells not affected by heavy pumping, were generally above normal in the North-Central and Rocky Mountain States. On the other hand, they were somewhat below normal in the Southern and Eastern States during most of the year.

Prosperity Decade Foreseen By Water Systems Group

"WE can have a decade of prosperity if the conversion from wartime to peacetime is handled with proper management."

So said Herbert C. Angster, executive secretary and director of the National Association of Domestic and Farm Pumping Equipment and Allied Products Manufacturers, at the annual meeting of the association recently.

The group is composed of the leading manufacturers of electric water systems, hand pumps, windmills, and allied products. The industry has undertaken a comprehensive program of postwar planning to provide for maximum employment after the war. Reports at the annual meeting indicate that there is ample productive capacity among the approximately 80 manufacturers now in the business to produce half a million or more water systems.

Reports have been compiled and distributed to members on the future markets for hand pumps, windmills, and water systems; state and federal sanitation codes; water supplies for specialized farming; trend in the number and site of farms; and changes in water level.

L. E. Wilson, president of the Everite Pump and Manufacturing Company, Lancaster, Pennsylvania, was re-elected president of the national association of Domestic and Farm Pumping Equipment and Allied Products Manufacturers. Walter F. Deming of The Deming Co. was elected vice-president and J. P. Curtin of Geo. D. Roper Corporation was re-elected treasurer.

Postwar Trade

TO help American industry bridge immediate dislocations after V-E Day, nearly 200 of the outstanding postwar trade potentialities, new products and service have just been summarized in "Transition Opportunities," the latest postwar study published by the N. Y. Journal of Commerce.

"Transition Opportunities" was

prepared from data secured through key industrialists, government and trade association officials. Copies may be had at 25 cents each from the N. Y. Journal of Commerce, 63 Park Row, New York 15, N. Y.

Record Cable Well Drilled In Canada

OVERCOMING more than usual hazards associated with deep drilling by cable tools, Maxmont Syndicate's Lundbreck 1 in Southwestern Alberta had a whole series of world records beaten at the end of 1943 and was generally recognized as the world's deepest cable-tool hole.

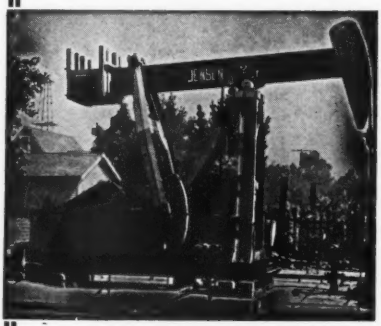
With many obstacles overcome during its 10-year search for oil in undeveloped territory, it was still making hole at the year-end with more than 9700 feet recorded in the log. It began drilling on October 24, 1943. Originally it was referred to in the Alberta industry as "Mar John Maxmont No. 4."

History of the well, not previously available, shows it started with a 16-inch hole and on November 15, 1934, 364 feet of 13⅜-inch casing was run. April 2, in the following year, the hole was at 1756 feet, with 10¾-inch pipe set to bottom. The next casing, 8⅝-inch, was set to 2875 feet, and from that point to present depth, approaching 10,000 feet, is open hole, totaling now more than 6800 feet and probably the longest section of open cable-tool hole in the world. Third world's record expected is that it is the deepest 8-inch cable-tool hole yet drilled.

The well has had 24 fishing jobs, which have been overcome with a loss of drilling time totaling 32½

(Continued on page 22)

Why drillers recommend JENSEN Pumping Units



The JENSEN Pumping Unit has many friends among drillers because, from any good well 100 feet deep or deeper, it makes water cheap and dependable. In other words it backs up the work of the driller —enables him to get full credit for a job well done. We are glad to furnish drillers with helpful illustrated literature. Write for it.

JENSEN BROS. MFG. CO.

14th and Pacific Streets, COFFEYVILLE, KANSAS, U. S. A.

EXPORT OFFICE: 50 CHURCH ST., NEW YORK CITY, NEW YORK

FROM THE MAILBAG

This page is open to any of our readers having questions to ask relating to drilling, driving pipe, dressing bits, etc. All letters will be answered promptly by experienced drillers and engineers who are qualified to give intelligent advice on these subjects. We will publish as many letters of general interest as space will permit. Address: The Driller, South Milwaukee, Wis.

Sirs:

Every little while we have the story of something dropping in a well or an obstruction occurring, and it is a question of how to fish it out. Can you give us any information as to how to find out what is in the well? Can hard soap or putty or some other means be used to find out what is in the well and its location?

L. F. B. New York.

We presume you refer primarily to small objects such as wrenches, pipe fittings, cylinders, etc. Nearly all drilling tool manufacturers have fishing tools available for recovery of drilling tools such as bits, stems, jars, etc.

Frequently if the part lost is of little value it will not pay to attempt to recover same as it may be difficult to locate if it is embedded in the thick sludge. Usually the cheapest and quickest plan is to go ahead with the work as the object will be forced out into the walls of the hole and out of the way.

If the hole is in rock, the quickest method of getting rid of a small object is to drill it up as the action of the bit will soon grind it into fragments. Sometimes large chunks break off the bit or some other piece of steel drops into the hole which would make it difficult to break up and get rid of in this manner. In that case the first thing to do is to clean the hole out as clean as possible and then run an impression block to determine the size and position of the lost object. Some sort of alligator grab or home made fishing tool can be used for recovering the object.

To make an impression block, secure a round piece of wood having a diameter of 1" less than the diameter of the hole in which it is to be used. The length of the piece should be about six times the diameter of the hole. Taper off one end of the block so that it will have the same shape as the pin of drill tool joint or about 1/8" larger. The idea is to make the end of piece of such shape that it can be screwed into box of rope socket or jars.

At the other end of block, tack on a piece of tin or thin sheet iron having a width of 3 or 4" and a length to reach completely around the block and lap over a distance of an inch or so.

In tacking on the tin or sheet iron so place it that about 1½" projects beyond the end of block, thus forming a cup on end of block.

Take Impression

Next place the block in a vertical position with cup end up and into cup pour sufficient melted beeswax, soap or paraffin to fill it even with rim. Allow the block to remain vertical until the beeswax becomes solid and then smooth off the surface of the wax by scraping.

Paraffin, if used, must be melted and poured the same as beeswax, but with soap, owing to its plastic nature, it is not necessary to melt it, it being possible to pound into shape.

If soap is used 40 to 50 nails should be driven in the bottom of block, the nails being driven down

until the heads come within about ½" of the block. Use a sufficient number of bars of heavy laundry soap to completely cover the end of block and pound them down into the cup over the nail heads, that is pound the soap until the different bars sort of run together and until a smooth surface is obtained.

After smoothing up the surface the outer edge of tin should be slightly crimped inward, this crimping together with the nails being for the purpose of holding the soap in place.

Mark Cable

To run the impression block, the tools to be used are rope socket, a set of jars, the pin end of block screws into lower end of jars. Some drillers use just the rope socket but it is best to use the jars also especially if there is much water in the hole. When lowering the tools into the hole, let them down carefully and just before reaching the top of the lost tool or object, go extremely slow. In order to determine the exact point at which the tools will strike, it is a good plan to mark the cable beforehand by tying a piece of string around it.

To get a good impression, let the block seat itself on top of the lost object and then let enough slack into the cable to allow the weight of bottom part of jars to rest upon the block. Care must be exercised to see that the block does not strike the top of the tools you want as otherwise a blurred impression will result.

After the shape and location of the lost object has been determined, it is usually possible to obtain or make a suitable fishing tool to recover the object. As stated above, ordinarily an alligator grab or drive down socket will usually do the trick.

For profitable shallow well drilling. "Hi-Lastic" lets the tools strike faster, harder blows. Keeps the bit turning better on all types of formation . . . helps reduce tendency for the hole to get out of round, and for the bit to channel. "Hi-Lastic" is internally lubricated. No manila cracker needed.

For profitable deep well drilling, use Macwhyte Standard Cable - Tool Lines. Just the right elasticity to strike long, hard, sharp blows.

For fast bailing, use Macwhyte Sand Lines. Coarse laid (6 x 7) or soft laid (6 x 19) . . . in milk plow steel grade.

ARMY E NAVY

Get the CORRECT line for your equipment from No. 775

MACWHYTE COMPANY

2939 Fourteenth Avenue, Kenosha, Wisconsin, or any authorized Macwhyte Distributor or Mill Depot

Manpower Losses...

(Continued from page 5)

south of Rockford, undertook to enter the well contracting game.

The Senior Allabaugh lost no time in getting started. His first step was to survey the equipment field and select a drilling machine best suited to his needs. Such a unit he found in a Bucyrus-Erie 21-W, purchased in early 1940. Three months later he bought another larger machine—a Bucyrus-Erie 22-W—because there was already plenty of work to keep two drills busy. He selected the larger 22-W because some of the jobs he was now acquiring really called for a heavier drill than the 21-W.

In spite of the difficulties posed by the coming of the war, the Allabaugh Company went after well work and got it, keeping both machines humming. To the 21-W went the shallow hole jobs while the 22-W tackled the deeper stuff. It wasn't long before Allabaugh found the work coming to him instead of his going after it, and this trend has continued until now the firm drills about 15,000 feet of hole yearly.

100 Feet is Average

A major part—about 85%—of the Allabaugh jobs are 6-inch wells, the remaining 15% being 8-inchers. Average depth is 100 to 125 feet, and the types of wells handled are farm, suburban, industrial, irrigation, and air conditioning.

Speaking of air conditioning, it was a job of this type on which the representative of THE DRILLER found the Allabaugh 22-W working last fall. The machine was set up on the sidewalk in front of the Owens, Inc. store, for whom the 6-inch air conditioning well was being drilled, a department store in downtown Rockford.

As any driller who's done similar work knows, a downtown set-up involves plenty of headaches. There are invariably troublesome city ordinances to contend with plus the mechanical problems of setting up, cutting and sludge removal, and water for drilling. None of these proved difficult to the Allabaugh Company, however.

One of the first major decisions to be made on this job was where and how to set-up. There were at least two choices: on the sidewalk or on the street. The well was close enough to the curb so that the machine itself could be set-up on the street in such a way that the tools would extend over the sidewalk and the well could be drilled there. However, a set-up like that meant that the truck would extend a good way into the street, creating an obstruction to traffic.

Ordinance Poses Problem

The other choice was to set up on the sidewalk. Here, however, an ordinance proved bothersome, for it required that four feet of passage way must be left open to pedestrians. By moving the machine to the very edge of the curb, the necessary opening was provided, so the set-up problem was licked. Guying the derrick brought a momentary problem, but a little ingenuity solved that. A flagpole hole in the sidewalk proved fine for driving the guy stake for one line, while the other was anchored first to a store sign and then to the same stake.

For disposal of the bailings, an 8-inch casing line was attached to the bottom of a steel barrel and laid to a storm sewer about 30 feet away. A water hose was run from a tap in the cellar of the store building to the barrel and cuttings bailed from the well hole were emptied into the barrel and carried to the storm sewer through the casing line by running water from the hose. The

success of this arrangement was gratifying, for the cuttings—even fair-sized gravel — were carried away by the rapidly running water in suspension. The hose also provided water for the drill hole, of course.

This job drew a good bit of curious attention from the numerous passers-by in the Rockford "loop" district. Allabaugh took advantage of this advertising "break" by making certain that the machine and the truck were well placarded to show who was drilling the well.

Other recent Allabaugh jobs included wells for the Northern Star Plating Company of Rockford, a firm that finishes vital parts for war planes, and the Green River Ordnance Plant at Amboy, Illinois—war work all.

Deepest Well

The deepest Allabaugh well is at Rock Falls, Illinois. This well — a 6-incher — was drilled for the Parrish-Alfred Fence and Machine Company to a depth of 815 ft. It was drilled with the 22-W.

The fact that Allabaugh owns citrus groves in Texas led to drilling of some irrigation wells in that state. Early in 1944, Allabaugh had to make a trip to Texas to look after his interests there. As long as he was making the trip anyway, he decided to take along one of his rigs and pick up a few well jobs while there to help pay for the trip. As it turned out, he didn't have to look hard, for there were plenty of citrus growers who wanted wells for irrigating their groves. The Allabaughs obliged by drilling a number of them, ranging in depth from 110 to 250 feet. They found drilling in Texas fairly tough compared with Illinois. Moreover, many fruit growers wanted 10-, 12-, and 15-inch diameter wells. Because these sizes were larger than the Allabaughs cared to drill, any thoughts of settling in the Lone Star state were quickly dismissed, and the Allabaughs returned to the North after a month or two. But before going back they had the unique experience of drilling a well with the front end of the machine in the United States and the back end in Mexico!

Besides water well drilling, the Allabaugh firm also drilled a 650-foot oil test hole near Como, and a 600-footer near Lowell in 1941. Other than these, however, the Allabaugh business has been all water well work.

Formations encountered in the Rockford territory include the Niagaran limestone, Maquoketa shale, Galena-Plattville limestone, and St. Peter sandstone in that order. Like all formations, these occasionally bring trouble in the form of fishing jobs.

With one exception, however, the Allabaughs have always had com-

ARMY
E
NAVY
There'll be a
BIG DEMAND
for these
"PUMPS by Aurora"
AURORA DEEP WELL TURBINES
are available in sizes of 4" to 24" for every pumping condition—oil or water lubricated. Streamline designed for highest efficiency and longest life.
for DEEP WELLS
APCO Master-Line WATER SUPPLY SYSTEMS
Here is the "Best Buy" in water systems for farm and home. Turbine-Type, Simple, Compact, Silent. Life-Time service of generous, low cost water supply. Fully Guaranteed.
for SHALLOW WELLS
We also make all Kinds of Centrifugal Pumps and Jet Pumps
Write for Descriptions.
AURORA Always PUMPS
AURORA PUMP COMPANY
58 Loucks St., Aurora, Illinois

plete success in their fishing efforts. The exception occurred on an 8-inch well drilled for the Seneff-Herr Company, a candy manufacturer of Sterling. In drilling this well, the bit jumped the pin at a depth of 650 feet. No amount of fishing could bring it up as the Allabaughs discovered after plenty of trying. Finally they reamed the hole, shot the hole and got enough water for their operations. That was the only lost tool the Allabaughs failed to recover through fishing.

Success in bringing in wells that satisfy the customer is an aim—and a habit—with the Allabaugh firm. It's the basis for their most effective advertising and the reason why they have well jobs ahead to last far into 1945.

You can look for more expansion of the Allabaugh firm, for its owner gives his business the combination of energy, skill, and foresight that's a great asset in well drilling.

And when the Allabaugh boys return from helping to do the biggest job our country has ever known, they'll undoubtedly take up where they left off — helping "R. G." with a well business that's definitely headed in the right direction.

A sailor went to an auction. The auctioneer was offering a parrot. He bid $5.00. Someone said $10,00, the sailor bid $15.00. Again someone bid $25.00 and the sailor bid $40.00 and got the parrot. As he walked out he said to the auctioneer, "That's a big price to pay for a parrot, can he talk?" The auctioneer said: "You ought to know, he's the one that's been bidding against you."

"Do you mean to say your husband beat you when you arrived home after midnight?"

"Yes—but only by 20 minutes!"

WIT BITS

Some boys in Kansas City were showing a Texas rancher the town. "What do you think of our stockyards?" they asked him.

"Oh, they're all right, but we have branding corrals in Texas that are bigger," he said.

That night they put some snapping turtles in his bed. When he had turned back the cover, he asked what they were.

"Missouri bedbugs," they replied.

He peered at them a moment. "So they are," he agreed. "Young uns, aren't they?"

"My feet burn like blazes. Do you think a mustard bath would help?"

"Sure! There's nothing like a little mustard on hot dogs."

A hypochondriac, after reading the daily medicine column, in wild alarm telephoned his doctor that he was sure now he had a fatal liver disease.

"Nonsense!" protested the doctor. "You wouldn't know whether you had that or not. With that disease there is no pain or discomfort of any kind."

"I knew it!" gasped the patient. "My symptoms exactly!"

"They tell me you have a dog that can play checkers."

"Yep."

"Why man, do you know what you've got there? You could go into the movies and clean up a fortune with a dog as smart as that."

"Humph. He ain't so smart. Last night I beat him three games straight."

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WATER is usually considered industry's cheapest commodity — but too frequently it costs more than it should. Lowered efficiencies increase power bills. Pump breakdowns are costly, not only for repairs but in interfering with production. Now, with the installation of a Peerless Pump, three objectives are accomplished: (1) Water is pumped at the lowest cost; (2) Because of the exclusive engineering design, construction and fine workmanship of the bowl and impeller assembly, *original efficiencies* are closely maintained over a greatly extended performance period, far beyond normal; (3) Pump repairs are reduced to the minimum.

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Geophysical . . .

(Continued from page 7)

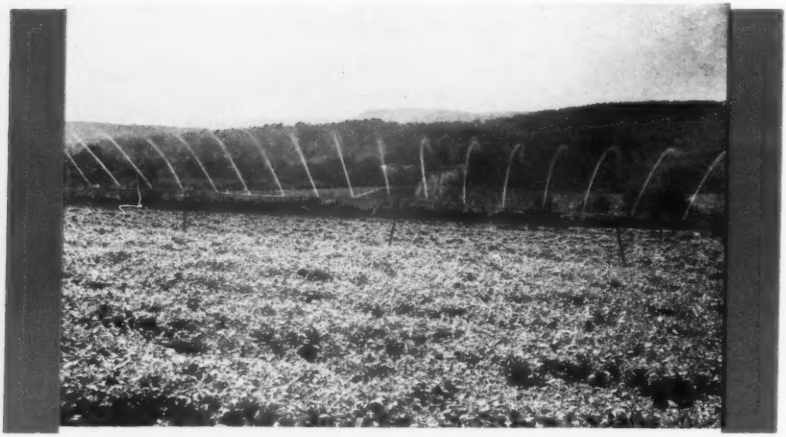
the ordinary stream gauging meter, has long been used in water well work. For use with geophysical surveys an ordinary stream-type propeller meter was adapted to run in a vertical plane inside a housing. Three contact pins on the gear driven by the propeller are spaced to create signals from which the direction of flow up or down through the instrument can be recognized. The rate of flow can be calculated from timing the period between signals. When direct current was used there was considerable electrolysis of working parts, but satisfactory results have been obtained by use of low amperage alternating current. The chief handicap of this instrument is that it becomes fouled in growths, debris, cavings, etc., which interfere with operation.

Another type of current meter for use in wells has been developed but is still in the experimental stage. It consists of a counter-weighted vane which motivates a variable resistor. Moving fluids deflect the vane upward or downward changing the resistance in the circuit. The instrument is run into a well at a continuous rate of speed, giving a value of deflection, and deviations are interpreted to indicate fluid movement. Experimental calibration of the instrument and use in several wells suggest that it may work satisfactorily under conditions where the propeller-type meter proves unsatisfactory. A more sensitive model as to shop work and mechanical details is being constructed and will be tested in the field soon.

Additional Geophysical Methods

The logs described above have increased our understanding of

Irrigating in Connecticut



• Part of 50-acre irrigation system on the farm of Edward Krott, Jr., Mt. Carmel, Connecticut. A Deming centrifugal pump keeps water flowing through the system.

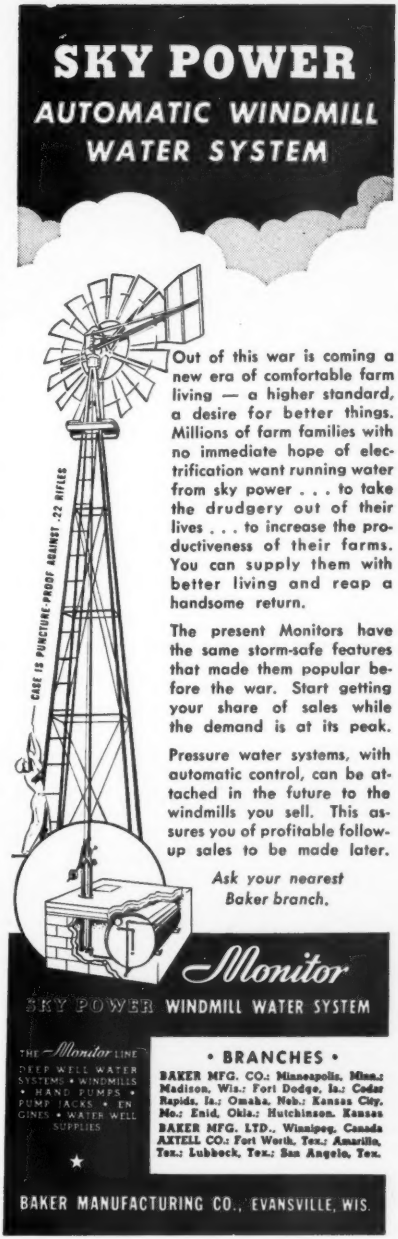
groundwater problems in Illinois. It is apparent that there are a number of improvements possible in the technique of operation and in the interpretation of results from the present methods. It also seems probable that a number of other methods or auxiliary instruments might have useful application in groundwater problems in Illinois and elsewhere.

The formation or drill-stem tester is widely used for testing the fluid content of formations in oil wells. To date no formation-tests have been run on water wells in Illinois but excellent results have been obtained in water wells in other sections of the country. Measurement of the static head in each aquifer and the sampling of its fluid content by use of the formation-tester would give worthwhile information about any well.

Various types of fluid samplers are in use in various industries and fields of investigations. Some samplers have been used in both oil and water wells in Illinois but there is no sampler at present available for use with a logging truck or measuring line which would prove satisfactory for obtaining samples large enough for chemical analysis. A fluid sampler has recently been designed, and it is planned to use it in detailed sampling of fluids in the well bore to obtain more detailed information than is now available and to furnish a check on fluid-resistivity logs.

The camera has been used successfully to inspect physical characteristics of wall rocks in water wells and is reported to have been used in oil wells. It is believed that use of a camera would be invaluable in fishing jobs and inspecting casing and liners.

Present methods of continuous recording of pH, or hydrogen-ion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concentration, apparently do not lend themselves readily to measurements at depths such as would be necessary to obtain a pH log of the typical deep water well. However, a pH measuring device is under construction which it is hoped can be adapted to well work and modified to use through the recording panel of the logging truck.

Magnetic logging to determine the location of pipe and tools, etc., in wells has not been done on any water wells in Illinois as yet. It is expected that some situation will arise to permit the use of this method on drilling, production, and completion problems of groundwater geology.

Also Use Rays

Radioactivity surveys (gamma ray and neutron) are used to log formations in cased and uncased portions of oil wells. It seems likely that these methods of investigation, particularly as applied to formations behind the casing, should prove useful in some water-well problems. For instance, it may permit identification of both glacial and bedrock aquifers which have been cased off, thereby giving new information from existing wells.

Attempts have been made with one of the available sidewall samplers to obtain samples of the wall-rock from an Illinois water well for core analysis and examination. It is believed that valuable information on wells already drilled and on formations which do not crop out close to the producing areas may be obtained from such side-wall samples, but most formations in the deep wells of Illinois are too hard for satisfactory use of side-wall sampling methods. Recently developed side-wall sampling devices designed to overcome these conditions may prove successful.

Splicing . . .

(Continued from page 8)

can be applied to splices in wire rope. If the splice has a neat smooth appearance, you can be pretty sure it is a good job.

For ordinary splicing jobs, most of the necessary tools can be found in any machine shop. A bench vise, marlin spikes, wire cutters, pliers and a hand hammer are required. The bench vise is used to hold the rope.

Several types of wire cutters are available, but Carew cutters are most satisfactory for cutting the wires and strands in wire rope. These cutters are made in various sizes, and the 14″ size is suitable for most splicing jobs. They can be purchased in any good size supply house.

Two sizes of marlin spikes should be ample, and these spikes can be made up by any blacksmith, or they can be purchased ready made from various manufacturers. For the general run of work, two spikes made from 5/8″ hexagon tool steel, with a straight hexagon handle approximately 3″ long and about 9″ of taper to the point of the spike, and two larger spikes made from 3/4″ or 7/8″ hexagon tool steel with 4 inches of hex handle and about 10″ of taper are suggested. After forging, the tapered section should be smoothly dressed and either tempered or case hardened so that the spikes will not be scratched up during the spicing operation.

The hammer can be an ordinary hand hammer or better still a hammer with a brass head. Wooden mallets are sometimes used because they are less likely to damage the wire rope when the splice is tapped into shape.

—From "Ropeology", published by Macwhyte Company, Kenosha, Wis.

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For Sale, Well drill and complete tools. Mrs. John Kovack State Highway 9-W, Tomkins Cave, New York.

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For Sale. Long established business and home. Good chance for a man that can put up Wind mills, electric pumps and do plumbing, etc. For description and particulars write to H. J. Witter. 830 S. W. First Avenue, Portland 4, Oregon.

HELP WANTED

Several well drillers . . . $1.25 per hour. Box 0591

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Wanted — Armstrong No. 35-W or Bucyrus-Erie 21-W or 33-W drill. Machine must be in good condition. Please advise location, equipment included and price. Box 4612

WANTED ONE or TWO ALL STEEL DRILLS. Bucyrus preferred. Capacity 500'. With or without tools. State age and best cash price. G. S. Gardner —Stanley, New York.

Deepest Well . . .

(Continued from page 9)

months, and necessitating the redrilling of 1370 feet of hole.

Most costly experience with a fish took 18 months to complete, being caused by a broken drill line 550 feet from bottom. After several efforts hold was taken on the broken line with a center spear, but the jars of the fishing string broke in such a manner that it was impossible to get over them with a socket.

In face of this difficulty a special acid formula was developed and this proved successful, eating away the obstruction in the hole to a point that it could safely be removed by the use of ordinary fishing tools.

As progress has gone steadily on from the bottom of the 8⅝-inch casing the wall of the open hole has been cemented and in order to facilitate the cementing of various levels where caving occurred as a result of fishing jobs a specially designed cement dump has been installed and this can be used to spray cement at any desired depth on the walls.

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Reprinted from Oil Weekly

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